

# AERODYNE 285 THREE BAND THREE

**CIRCUIT.**—The aerial input circuit provides connections for a mains aerial, a direct external aerial or a series aerial condenser. Coupling to the grid of V1, an H.F. pentode operating as an amplifier, is effected by iron-cored band-pass coils on the medium and long waves.

On short waves transformer aerial coils are used and an additional aerial coupling condenser is brought in on the shorter wave range. The cathode bias of V1 is variable to provide volume control.

V1 is tuned anode coupled to V2, a triode demodulator, and reaction windings are incorporated in the coupling coils. Reaction is controlled by a variable condenser in the usual manner. It will be noticed that the circuit includes a heater by-pass condenser and adequate anode decoupling for V2.

V2 is resistance capacity connected to V3, an output pentode, in the anode circuit of which is connected the speaker matching transformer. Across the primary of the transformer is connected a resistance and condenser in series for tone control.

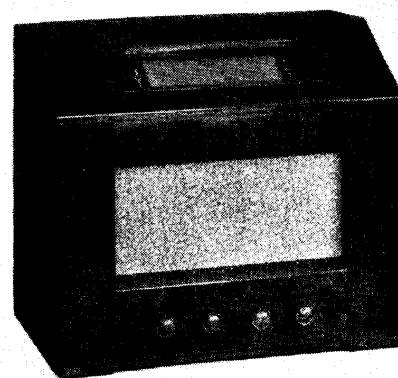
Mains equipment consists of a mains transformer, a full-wave rectifying valve,

V4, electrolytic smoothing condensers, and a smoothing choke consisting of the speaker field energising coil. It will be noticed that the anodes of V4, the full-wave rectifying valve, are by-passed by two fixed condensers.

**Chassis Removal.**—A false bottom (secured by four wood screws) enables the underside of the chassis to be inspected and serviced.

If it should be desired to remove the chassis, take off the back of the cabinet (secured by two screws), set the gang to maximum, and then pull away the clip-on reflector strip and unhook the pointer drive cord from the drum of the gang condenser. Unhook the waveband indicator switch cord from the actual indicator and unclean the dial lights cable from the side of the cabinet. Remove the four control knobs (grub screws) from the front.

Remove the false bottom and the four chassis securing bolts and washers from the base. The chassis is then available for



The 285 by Aerodyne, Ltd., is a three valve plus rectifier "straight" set covering three bands.

servicing but various leads still hold it to a certain extent.

For complete removal, the leads to the dial lights must be unsoldered and also the four leads to the speaker transformer (mounted on the side of the chassis).

When reconnecting these leads: the red lead of the dial lights cable goes to the

## VALVE READINGS

No signal. Volume maximum. No reaction.  
M.W. min. cap. 200 volts A.C. mains.

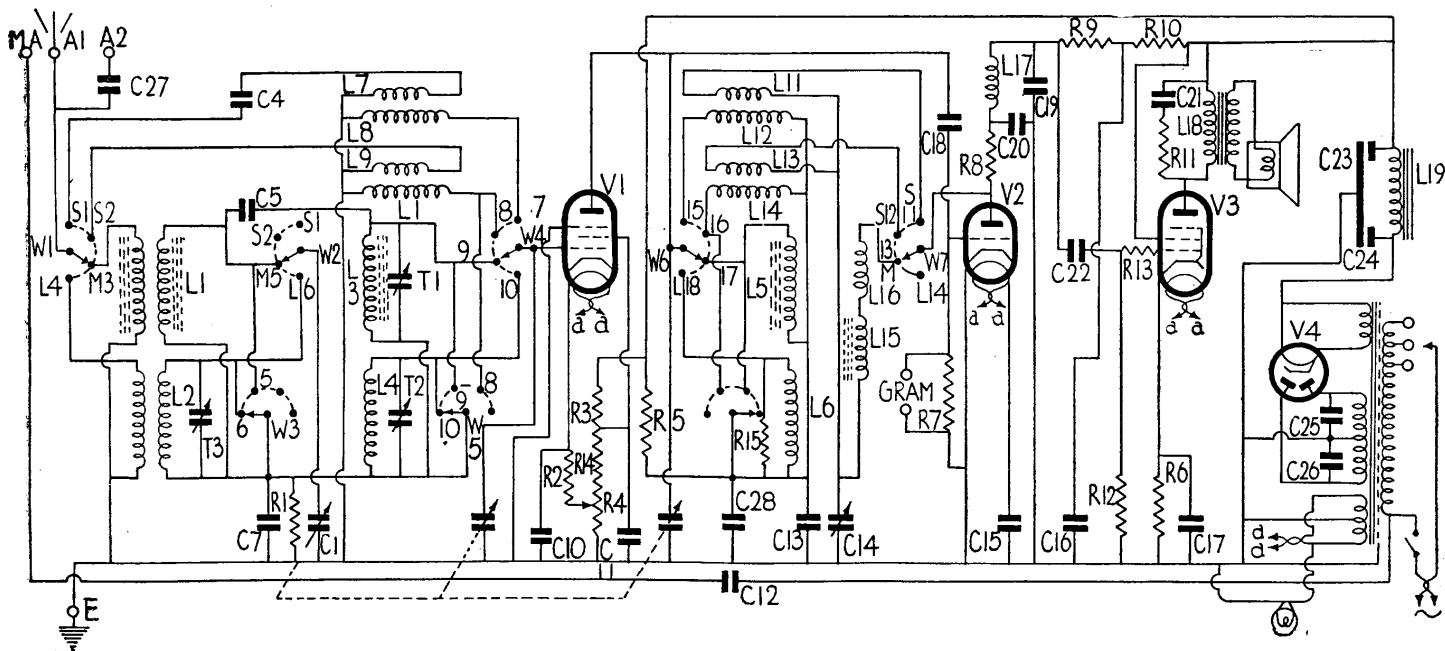
V.	Type.	Electrode.	Volts.	Ma.
1	Mullard VP 413 (7)	Anode ..	242	9.1
		Screen ..	120	3.4
2	Mazda AC2HL (5)	Anode ..	75	3
3	Brimar 7A 3 (7)	Anode ..	225	30
		Screen ..	258	5.9
4	Mullard IW 3 (4)	Cathode ..	330	—

## RESISTANCES

R.	Purpose.	Ohms.
1	V1 grid return ..	1,000
2	V1 fixed cathode bias ..	300
3	V1 screen pot. (part) ..	20,000
4	V1 variable bias and volume control ..	10,000
5	V1 anode decoupling ..	3,000
6	V3 cathode bias ..	140
7	V2 grid leak ..	2 meg.
8	V2 anode H.F. load ..	300
9	V2 anode load ..	40,000
10	V2 anode decoupling ..	20,000
11	Tone modifier ..	20,000
12	V3 grid leak ..	500,000
13	V3 grid stopper ..	100,000
14	V1 screen pot. (part) ..	20,000
15	LW anode coil modifier ..	250,000

## CONDENSERS

C.	Purpose.	Mfds.
4	SW1 aerial coupling ..	.00003
5	Top band pass coupling ..	.000005
7	Bottom band pass coupling ..	.05
10	V1 cathode bias shunt ..	.1
11	V1 screen decoupling ..	.1
12	Mains aerial ..	.0002
13	V1 anode decoupling (part) ..	.1
15	V2 heater bypass ..	.02
16	V2 anode decoupling ..	1
17	V3 cathode bias shunt ..	50
18	V2 grid coupling ..	.00002
19	HF bypass ..	.001
20	HF bypass ..	.001
21	Tone modifier ..	.01
22	LF coupling ..	.1
23	HT smoothing ..	8
24	HT smoothing ..	8
25	Rectifier HF bypass ..	.02
26	Rectifier HF bypass ..	.02
27	Series aerial ..	.0001
28	V1 anode decoupling (part) ..	.1



There are a number of refinements in the 285 circuit. Note, for example, the H.F. condensers across the rectifier and the complete filter arrangements in the anode circuit of V2.

red lead of the top cable, and the white to the white. The two blue leads go to the two tags nearest the chassis, and the red and black leads from the speaker are connected to the tags already occupied by leads of their respective colours.

To reassemble the cord drive, fit spring on the left-hand lug on drum and connect end of cord to spring. Wind cord once round drum, bring cord over lowest left-hand pulley and then over to right-hand pulley, and fit cord on pointer carrier (thumb-nut fixing). Then pass cord over highest left-hand pulley and down to drum, encircling it once then through aperture, and hook on to the spring secured to right-hand lug on drum.

**Special Notes.**—There are two dial lights located in screw-in holders fixed to the wavelength dial assembly. These are rated at 6.2 volts .3 amp., and are fitted with M.E.S. bases.

The mains voltage adjustment device located on the top rear of the chassis takes the form of a four-pin valve holder with three of the sockets marked with voltage values. A flying lead fitted with a wander plug fits into the required socket.

It will be noted that A2 places a condenser in series with the input. A flying lead fitted with a wander plug is adapted to fit into one of the aerial sockets when using the mains as an aerial. When not in use the plug fits into an extra earth socket, and the coupling condenser then operates as a mains suppressor.

A pair of sockets at the rear of the chassis enable a pick-up to be used.

Sockets at the side of the cabinet mounted on a paxolin strip enable a low

impedance permanent-magnet speaker to be operated.

C5 is a piece of insulated wire wound round the two points where the capacity coupling is required.

## Alignment Notes

Connect an output meter across the primary of the speaker transformer and a service oscillator between the aerial and earth sockets, preferably through a dummy aerial or fixed condenser. Set reaction control just short of oscillation.

The receiver should not be allowed to oscillate at any time throughout the ganging operations. Set volume control to maximum. Reduce input from oscillator as circuits come into line.

**Medium Waves.**—Switch receiver to the medium waves and set pointer to read 250 metres. Tune service oscillator to 250 metres (1,200 kc.) and adjust T1 for maximum response.

The medium wave padding is fixed, but check calibration at 500 metres.

**Long Waves.**—Switch receiver to the long waves and set pointer to read 1,200 metres. Tune service oscillator to 1,200 metres (250 kc.) and adjust T2 and T3 for maximum response.

**Short Waves.**—There are no trimmers to be adjusted on the short-wave ranges. The short-wave calibration is adjusted at the works by inductance trimming, and normally these adjustments should not be necessary.

## QUICK TESTS

Quick tests are available at the leads to the speaker panel. Voltages measured between these and the chassis should be:—

Black lead, 330 volts, unsmoothed H.T.  
Read lead, 258 volts, smoothed H.T.  
Brown lead, 225 volts, smoothed H.T.

## Aerodyne 285 on Test

**MODEL 285.**—Standard model for A.C. mains operation, 200-250 volts, 50 cycles. Price 9 gns.

**DESCRIPTION.**—Three-valve, plus rectifier "straight" table model, with four wave ranges.

**FEATURES.**—Full-vision scale with wavebands coloured. Wave ranges indicated by coloured strips through slot at side of scale. Concentric tuning, combined volume and master switch, reaction control. Sockets for pick-up and external speaker. Alternative aerial socket and mains aerial.

**LOADING.**—52 volts.

### Sensitivity and Selectivity

**SHORT WAVES (13-48 and 48-165 metres).**—Good sensitivity and very easy handling with smooth reaction. Gain well maintained.

**MEDIUM WAVES (160-550 metres).**—Representative gain and selectivity. No difficulty in separating local stations, and a number easily obtained between them with careful handling of volume and reaction.

**LONG WAVES (700-2,000 metres).**—Similar gain and selectivity to medium waves. All main stations easily received. Reaction control smooth and free from overlap.

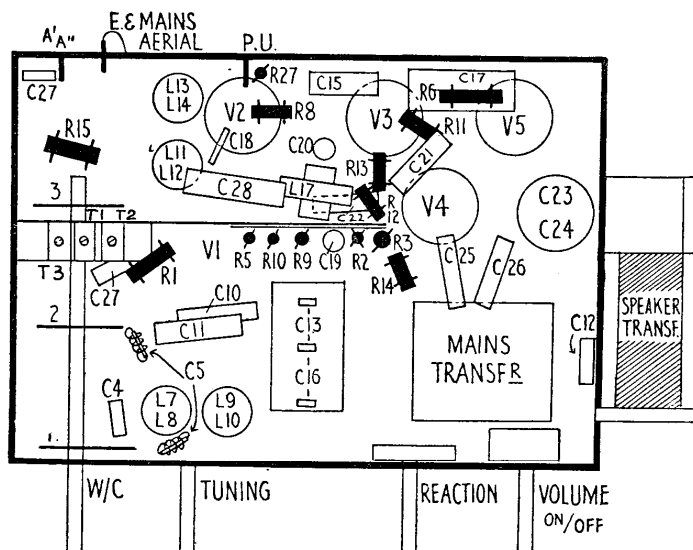
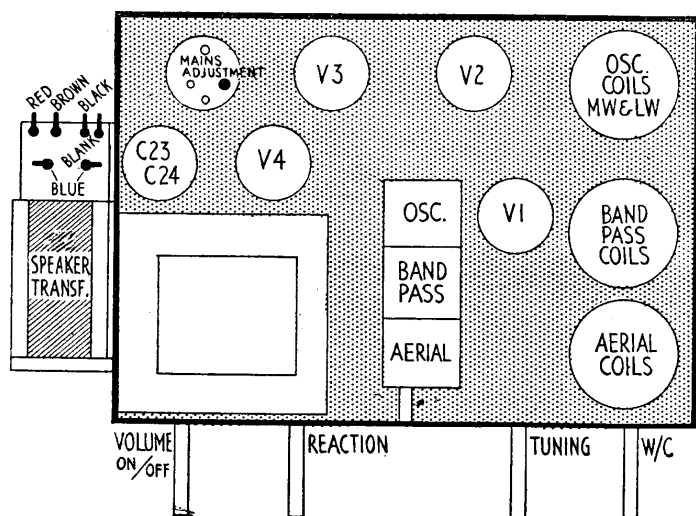
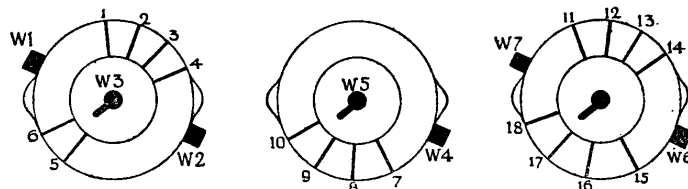
### Acoustic Output

Representative tone for a mains pentode. Speech crisp and clean, with little coloration and well balanced reproduction on music. Adequate volume for an ordinary room.

## WINDINGS

Winding.	Ohms.	Winding.	Ohms.
L1 prim	.3	L11	.4
sec...	1.3	L12	.1
L2 prim	15.3	L13	.6
sec...	14.6	L14	.2
L3	1.3	L15	3.5
L4	13.5	L16	3.4
L5	1.2	L17	323
L6	14.6	L18	970
L7	.7	L19	1,650
L8	.1	Mains trans.	
L9	.3	prim.	20
L10	.2	Total HT sec.	500

Left, the switch banks in the order in which they are numbered in the under-chassis layout.



Practical details of the 285 are shown in the two layout diagrams above. Resistances are indicated in black and condensers in outline.